

REMARKS

Amendments to the Specification are presented to correct a spelling error.

Claims 1-17, 19-21 and 25-35 were rejected under 35 U.S.C. 102(b) as being anticipated by Heck. Claims 18 and 22-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Heck. Applicants respectfully traverse and request reconsideration.

Turning first to Claim 1, Applicants claim “servocontrolling at least a common mode static output current from the frequency transposition device to a current proportional to a reference current and independent of a static output current from the transconductor block.” Applicants respectfully submit that the Heck fails to teach or suggest this limitation.

Applicants note from a review of Heck that the transconductance amplifiers 204 and 206 are formed from components 315/318/320/330 and 317/326/328/334, respectively. The static output current of the transconductance amplifiers 204 and 206 may be found at the collector terminals of transistors 314 and 316. These terminals are directly connected to the common emitters of the transistor pairs 306/308 and 310/312, respectively, forming the current switching block 210. The common mode static output current for the device is found at the nodes associated with the load resistors 302/304.

The static output current of the transconductance amplifiers 204 and 206 directly affects the operation of the current switching block 210. In other words, the mixer current in the current switching block 210 depends on the current of the current sources of the transconductance amplifiers 204 and 206. Thus, the common mode static output current in Heck is clearly dependent on the static output current of the transconductance amplifiers 204 and 206. This directly contradicts the claimed invention which requires that the “common mode static output

current from the frequency transposition device [be] independent of a static output current from the transconductor block.” The direct connections between the collector terminals of transistors 314 and 316 (for the transconductance amplifiers) and the common emitter terminals of transistors 306/308 and 210/312 (of the current switching block) preclude operation of the Heck device in accordance with the claimed independence feature.

Additionally, to the extent the common mode static output current in the current switching block 210 of Heck is tied to the reference current of current sources 315 and 317, as alleged by the Examiner in the Office Action (see, bottom of page 2), there can be no anticipation of the claimed invention because Heck teaches that the current sources 315 and 317 are part of the transconductance amplifiers 204 and 206. It is not understood how a current which depends on transconductance amplifier current sources 315 and 317 could meet the claimed invention which requires that the “common mode static output current from the frequency transposition device [be] independent of a static output current from the transconductor block”, since the static output of the transconductance block is defined by the current of the current sources 315 and 317. The Examiner’s own technical analysis of the operation of the Heck device would lead to a finding of no anticipation of the claimed invention.

In support of the rejection of claim 1, and more particularly the “servocontrolling at least a common mode static output current ...” limitation, the Examiner generally cites to col. 3, lines 12-54. This unfocused citation by the Examiner is not helpful in identifying for the Applicants which teachings of Heck are alleged by the Examiner to meet the recited claim limitations. For example, nowhere in this cited portion of Heck is there a discussion of “common mode static

output current” or an “independent” current. How is it, particularly, that the Examiner asserts that these limitations are met by the Heck teachings?

Applicants accordingly respectfully submit that Heck fails to anticipate the claimed invention. Allowance of claim 1, along with its dependent claims 2-6, is requested.

With respect to claim 2, Applicants claim that the “common mode input current to the current switching block [is] independent of the static output current from the transconductor block.” In Heck, the common mode input current is the current at the common emitters of transistors 306/308 and 310/312, while the static output current is the current at the collectors of transistors 314/316. Thus, in Heck these two currents are the SAME! It is unclear to Applicants how these currents can be “independent” of each other as claimed if they are in fact the same currents. In such a case, there is a clear “dependence” of the common mode input current on the static output current. Applicants accordingly submit that there is no anticipation of the claimed invention. Claims 2 and 3 are patentable over the cited art.

In claim 3, Applicants claim “making a differential comparison of the differential static output currents from the transconductor block.” In Heck, Figure 2 clearly shows that the two side of the differential static output currents from the transconductor block (202 and 206) are separated from each other. Heck does not make a differential comparison of those differential static output currents from the transconductor block since there is no teaching of a circuit that is connected to monitor both of those currents in comparison to each other. Clearly, in Heck, the operations of the feedback circuits 202 and 208 are separated from each other (see Figure 2). Applicants accordingly submit that there is no anticipation of the claimed invention. Claim 3 is patentable over the cited art.

In claim 4, Applicants claim “servocontrolling the common mode static output current from the frequency transposition device directly to the current proportional to the reference current and independent of static output current from the transconductor block.” Again, as discussed above, the common emitter terminals of transistors 306/308 and 210/312 (of the current switching block) in Heck receive the output current of the transconductance amplifiers 204 and 206. Thus, the common mode static output current of the current switching block in Heck is clearly dependent on the static output current of the transconductance amplifiers 204 and 206 which is set by the current sources therein. There is no anticipation of the claimed invention. Claims 4 and 5 are patentable over the cited art.

Claim 5 includes limitations similar to claim 3 and is asserted to distinguish over Heck for at least the same reasons as claim 3.

Claim 6 also recites “independent of the static output current from the transconductor block.” As discussed above, the Heck device operates in a manner wherein its operation is fully dependent on the static output current of the transconductance amplifiers 204 and 206 (at the collectors of transistors 314/316) which is set by the current sources therein. There is no anticipation of the claimed invention. Claim 6 is patentable over the cited art.

Independent claim 7 is asserted to be patentable over the cited art for at least the same reasons as claim 1.

Dependent claim 8 is asserted to be patentable over the cited art for at least the same reasons as claim 2.

Dependent claim 9 recites “a current source generating the reference current on its output terminal which is connected to a current switching block input.” The Examiner points to current

source 317 in Heck. Applicants disagree with the Examiner's technical analysis. First, Heck teaches that current source 317 is part of the transconductance amplifier. Applicant has separately claimed a transconductor block. The current source 317 cannot be a part of both structures. Second, Applicant claims that the current source output is connected to the current switching block input. In Heck, that would be the common emitters of transistors 306/308 and 310/312. It is clear in Heck that current source 317 is not connected to the transistors 306/308 and 310/312. Applicants accordingly submit that claim 9 is not anticipated. Claim 9 is patentable over the cited art.

Applicants further recite in dependent claim 9 "a first differential current amplifier having a first input connected to the output terminal from the current source, a second input connected to the current switching block input and to the transconductor block output, and an output connected to the transconductor block output." There is no differential current amplifier in Heck with two inputs and one output connected as recited in the claim. The Examiner's reliance on feedback transistor 316 is misplaced as it is not a differential current amplifier and is not connected in the manner recited by the claim. Applicants accordingly submit that claim 9 is not anticipated. Claim 9 is patentable over the cited art.

In dependent claim 10, Applicants further claim "a second differential current amplifier having inputs connected to the differential transconductor block outputs and an output connected to a means for polarizing this transconductor block." The Examiner's analysis on page 4 of the Office Action focuses on Heck's teaching of the use of differential signals, but wholly fails to address the claimed structural limitations of a differential current amplifier and a means for polarizing. The Examiner provides no indication as to where there is a teaching in Heck for the

claimed structure or the recited interconnection of that structure. Applicants accordingly submit that claim 10 is not anticipated. Claim 10 is patentable over the cited art.

Dependent claim 11 is asserted to be patentable over the cited art for at least the same reasons as claim 4.

Dependent claim 12 recites “a current source” and is asserted to be patentable over the art for at least the same reasons as claim 9. Additionally, claim 12 recites “a differential current amplifier.” There is no teaching or suggestion in Heck for the claimed amplifier or how it is connected in the circuit. Applicants accordingly submit that claim 12 is not anticipated. Claim 12 is patentable over the cited art.

Dependent claim 13 is asserted to be patentable over the cited art for at least the same reasons as claim 10.

Dependent claim 14 is asserted to be patentable over the cited art for at least the same reasons as claim 6.

Dependent claim 15 recites “a current source” and is asserted to be patentable over the art for at least the same reasons as claim 9. Additionally, claim 15 recites a first and a second “differential current amplifier.” There is no teaching or suggestion in Heck for the claimed amplifiers or how they are connected in the circuit. Applicants accordingly submit that claim 15 is not anticipated. Claim 15 is patentable over the cited art.

Independent claim 17 is asserted to be patentable over the cited art for at least the same reasons as claim 7.

Dependent claim 19 is asserted to be patentable over the cited art for at least the same reasons as claim 8.

Dependent claim 20 is asserted to be patentable over the cited art for at least the same reasons as claim 9.

Dependent claim 21 is asserted to be patentable over the cited art for at least the same reasons as claim 10.

Dependent claim 22 is asserted to be patentable over the cited art for at least the same reasons as claim 11.

Dependent claim 23 is asserted to be patentable over the cited art for at least the same reasons as claim 12.

Dependent claim 24 is asserted to be patentable over the cited art for at least the same reasons as claim 13.

Dependent claim 25 is asserted to be patentable over the cited art for at least the same reasons as claim 14.

Dependent claim 26 is asserted to be patentable over the cited art for at least the same reasons as claim 15.

Turning now to claim 27, Applicants claim “a servocontroller coupled between the radio frequency stage and the current switching stage and operable to control standby currents in the current switching stage independently of standby currents in the radio frequency stage.” As discussed above, the Heck reference fails to teach or suggest the claimed independence feature of the present invention. In Heck, the standby currents of the transistor pairs 306/308 and 310/312, respectively, forming the current switching block 210 are dependent on the standby currents of the input signals which are received at the common emitter terminals of transistor pairs 306/308 and 310/312. However, Heck further teaches that the standby currents of the transconductance

amplifiers 204 and 206 at the collector terminals of transistors 314 and 316 are the same currents which are the standby currents of the input signals to the current switching block 210. Given this structural relationship, there is a clear dependence between the standby currents of the current switching block 210 and the standby currents of the transconductance amplifiers 204 and 206. Applicants accordingly submit that claim 27 is not anticipated. Claim 27 is patentable over the cited art.


Dependent claims 28-35 are submitted as being patentable over the cited art for at least the same reasons as recited above with respect to similar claim language present in claims 1-27.

New claims 36-40 have been added. Applicants respectfully submit that Heck fails to teach the claimed circuit and in particular fails to teach the recited "servocontroller stage coupled between the differential transconductance stage and the differential current switching stage" in the manner claimed.

Respectfully submitted,

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